Desktop Flora and Fauna Assessment

Proposed provision of dwelling entitlement, Lot 12 DP 529709 Rowan Avenue Uralla

Prepared for

Keiley Hunter Urban Planner, Coffs Harbour

Idyll Spaces Environmental Consultants

21 Titans Close, Bonville 2450

gregelks@bigpond.com

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Figures and Tables

G.N. Elks B.Sc (Botany), M.Litt (Ecology), MECA

Introduction

Brief

I have been engaged by Keiley Hunter Urban Planner to undertake a desktop flora and fauna habitat assessment in support of a planning proposal that seeks to amend the Minimum Lot Size map applicable to Lot 12 DP 529709 Rowan Avenue Uralla from 200 ha to 40 ha to enable one dwelling entitlement.

This assessment will:

- Review threatened flora species, population and ecological community records in the locality of the study area.
- Identify any measures likely to be available so as to avoid, mitigate or offset any impacts on threatened species, communities, populations, or their habitat, or critical habitat(as listed by the *Threatened Species Conservation Act 1995* (TSC Act) or the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) potentially occurring within the study area.
- Assume that the available measures would be implemented where required in the event of a dwelling approval and evaluate the likely impacts under the headings of the 7 part Test and the Significant Impact Guidelines and provide an opinion as to whether or not a SIS or referral to the Federal Environment Minister would be likely to be required.

Locality, study area and subject site

For the purpose of this assessment:

- the locality is defined as the area within a square of 0.1^0 (approximately 10x10km) centred on the subject site;
- the study area is defined as Lot 12 DP 529709 Rowan Avenue Uralla (Figure 1), and
- the subject site is a proposed dwelling envelope of approximately 2ha (Figure 1).

Figure 1. Nearmap 2015 orthophoto showing study area and subject site

Assessment methodology

Records of threatened species, populations and ecological communities in the locality (Tables 1-3) were extracted from the Wildlife Atlas database (http://www.bionet.nsw.gov.au/ 19 February 2015).

Threatened species recovery or threat abatement plans, preliminary determinations and habitat data for threatened flora and fauna was obtained from the OEH Threatened Species website (http://www.environment.nsw.gov.au/threatenedspecies/).

A 2015 aerial orthophotograph (Nearmap 2015) was inspected online (http://maps.au.nearmap.com/) to identify the nature of the vegetation and the presence of any habitat features likely to be of significance for fauna.

The likelihood of occurrence of threatened species and communities in the study area is assessed in Tables 4-6. Assessment considered the species recorded in the locality, their habitat requirements and the nature of the vegetation in the study area. The likelihood of occurrence of species has been defined as follows:

- Known the species has been observed in the study area;
- Likely there is a medium to high probability that a species occupies the study area;
- Possible suitable habitat for a species may occur in the study area but there is insufficient information to categorise the species as likely or unlikely to occur;
- Unlikely a low probability that a species occupies the study area;
- Nil habitat in the study area is unsuitable for the species.

Results

Threatened species records in the locality

There are 5 records of 3 threatened flora species (Table 1) and 113 records of 14 threatened Fauna species (Table 2) in the locality. Eight Endangered Ecological Communities (EECs) are known to occur in Uralla Shire (Table 3).

Table 1. Threatened flora species records in the locality

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records
Plantae	Flora	Brassicaceae	1822	*Lepidium hyssopifolium*		Aromatic Peppercress	E1,P	E	1
Plantae	Flora	Poaceae	4895	*Dichanthium setosum*		Bluegrass	V,P	V	1
Plantae	Flora	Santalaceae	5871	*Thesium australe*		Austral Toadflax	V,P	V	3

Table 2. Threatened fauna species records in the locality

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records
Animalia	Aves	Anseranatidae	0199	*Anseranas semipalmata*		Magpie Goose	V,P		4
Animalia	Aves	Anatidae	0216	*Oxyura australis*		Blue-billed Duck	V,P		12
Animalia	Aves	Anatidae	0214	*Stictonetta naevosa*		Freckled Duck	V,P		7
Animalia	Aves	Accipitridae	0218	*Circus assimilis*		Spotted Harrier	V,P		3
Animalia	Aves	Accipitridae	0225	*Hieraaetus morphnoides*		Little Eagle	V,P		3
Animalia	Aves	Falconidae	0238	*Falco subniger*		Black Falcon	V,P		2
Animalia	Aves	Rostratulidae	0170	*Rostratula australis*		Australian Painted Snipe	E1,P	E	1
Animalia	Aves	Strigidae	0248	*Ninox strenua*		Powerful Owl	V,P,3		1
Animalia	Aves	Climacteridae	8127	*Climacteris picumnus victoriae*		Brown Treecreeper (eastern subspecies)	V,P		58
Animalia	Aves	Neosittidae	0549	*Daphoenositta chrysoptera*		Varied Sittella	V,P		1
Animalia	Aves	Petroicidae	0380	*Petroica boodang*		Scarlet Robin	V,P		1
Animalia	Mammalia	Dasyuridae	1008	*Dasyurus maculatus*		Spotted-tailed Quoll	V,P	E	1
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*		Koala	V,P	V	16
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*		Grey-headed Flying-fox	V,P	V	3

Table 3. Endangered ecological communities occurring in Uralla Shire

Scientific Name	NSW status	Comm. status
Carex Sedgeland of the New England Tableland, Nandewar, Brigalow Belt South and NSW North Coast Bioregions	E3	
Howell Shrublands in the New England Tableland and Nandewar Bioregions	E3	
McKies Stringybark/Blackbutt Open Forest in the Nandewar and New England Tableland Bioregions	E3	
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	E3	E
New England Peppermint (Eucalyptus nova-anglica) Woodland on Basalts and Sediments in the New England Tableland Bioregion	E4B	CE
Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion	E3	
Upland Wetlands of the Drainage Divide of the New England Tableland Bioregion	E3	E
White Box Yellow Box Blakely's Red Gum Woodland	E3	CE

Condition and habitat values of vegetation in the study area

The vegetation of the study area consists of remnant woodland, with dieback and some dead trees evident (Photograph 1). Tree density of the woodland ranges from significantly reduced (in the northwest of the study area) to absent (southwest of the study area). Similar areas of remnant woodland are extensive in the locality (especially north-west of the study area) and region.

There is a general absence of regenerating trees. Other characteristics of intact woodland missing from the study area include large woody debris and understorey trees and shrubs.

It is likely that the ground layer vegetation has been greatly modified by >100 years of close grazing by sheep and rabbits, and more recently by cattle. Similar areas of ground layer vegetation are extensive in the locality (especially north-west of the study area) and region. For the purpose of this assessment the ground layer vegetation is therefore assumed to be mixed native and exotic grasses and herbs that are resistant to the impacts of grazing and trampling.

Likelihood of threatened species and communities in the subject site

The subject site is characterised by low tree density (approximately 3 trees/ha) and is located on the northern edge of a substantial area cleared of trees (Photograph 2). It contains 5 mature to senescent trees, some of which are likely to contain hollows potentially of value to fauna. Because of the absence of other features of significance to fauna (large woody debris, shrub layer, rock outcrops, watercourses, wetlands, tall ground layer vegetation) the value of the subject site as habitat for fauna is low, primarily as foraging habitat for highly mobile species such as birds and bats (8 species). The presence of hollow trees may provide breeding opportunities for some of those species although the sparsity of tree and shrub cover indicates that it is likely to be sub-optimal as breeding habitat (6 species).

It is assumed that the woodland component of the study area and subject site is potential Koala habitat.

The occurrence of threatened flora in the study area and subject site is unlikely because of the long history of disturbance associated with grazing activities.

The most significant habitat values of the subject site are therefore those associated with the existing trees, especially those with hollows or are preferred Koala habitat trees. Because of the impacts of disturbance the habitat value for fauna of the ground layer is likely to be low. However, the likely presence of box and gum trees indicates that the vegetation is likely to be part of the EEC *White Box Yellow Box Blakely's Red Gum Woodland* (TSC Act) and possibly the critically endangered community (CEC) *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*, although whether the community meets size and condition thresholds is unknown.

Table 4. Likelihood of occurrence of threatened flora in study area

Flora	NSW Status	Comm Status	Habitat description	Likelihood of occurrence
Lepidium hyssopifolium	E P	E	Variety of habitats including woodland with a grassy understorey and grassland.	Unlikely; only recorded near Armidale in 1945 and 1958
Dichanthium setosum	V P	V	Heavy basaltic black soils and red-brown loams with clay subsoil	Unlikely; soils not suitable
Thesium australe	V P	V	Grassland and grassy woodland, especially with Kangaroo grass	Unlikely due to disturbance history

Table 5. Likelihood of occurrence of threatened fauna habitat in study area

Fauna	NSW Status	Comm Status	Habitat type	Habitat description	Likelihood of occurrence
Magpie Goose	V P		**Breeding**	emergent aquatic vegetation (e.g. cumbungi, phragmites, sedges) above deep water	Nil
			Foraging	Open grasslands, pastures, shallow wetlands, well vegetated dams or crops	Possible
Blue-billed Duck	V P		**Breeding**	Wetlands with some deep open water (greater than 1 m deep) and emergent aquatic vegetation (eg typha, phragmites or lignum)	Nil
			Foraging	open waterbodies greater than 1m deep.	Nil
Freckled Duck	V P		**Breeding**	Freshwater or brackish permanent or ephemeral wetlandfs with emergent aquatic vegetation (e.g. Typha, Phragmites, Lignum)	Nil
			Foraging	Permanent or ephemeral wetlands or swamps, or lakes, or farm dams or rivers.	Nil
Spotted Harrier	V P		**Breeding**	Trees with stick and twig nests.	Possible
			Foraging	Most commonly in native grassland, but also occurs in agricultural land	Possible
Little Eagle	V P		**Breeding**	Large trees with stick and twig nests.	Possible
			Foraging	Open eucalypt forest, woodland or open woodland	Possible
Black Falcon	V P		**Breeding**	Large trees with stick and twig nests.	Possible
			Foraging	sparsely distributed in NSW mostly in inland regions	Possible
Painted Snipe	E1 P	E	**Breeding**	Areas of tussock grass, or reeds or sedges or rushes or lignum within 500m and including shallow wetlands or ephemeral or permanent waterbodies, or inundated grasslands.	Nil
			Foraging	as per breeding	Nil
Powerful Owl	V P 3		**Breeding**	Hollows >45 cm diameter that are 6 m or more above the ground in living or dead trees.	Possible
			Foraging	Forest or woodlands and open habitats	Possible
Brown Treecreeper	V P		**Breeding**	Live trees, dead standing or fallen timber, stumps or posts with hollows greater than 6 cm diameter.	Possible
			Foraging	Eucalypt woodlands and dry open forest of the inland slopes and plains	Possible
Varied Sittella	V P		**Breeding**	Eucalypt forests, woodlands, mallee and *Acacia* woodland.	Possible
			Foraging	Eucalypt forests, woodlands, mallee and *Acacia* woodland.	Possible
Scarlet Robin	V P		**Breeding**	Grassy woodland and dry open forest	Possible
			Foraging	Grassy woodland and dry open forest	Possible

Fauna	NSW Status	Comm Status	Habitat type	Habitat description	Likelihood of occurrence
Spotted-tail Quoll	V P	E	**Breeding**	Hollow-bearing trees, fallen logs, small caves, rock crevices, boulder piles, rocky-cliff faces or animal burrows	Possible
			Foraging	Most	Possible
Koala	V P	V	**Breeding**	eucalypt woodlands and forests	Possible
			Foraging	As per Koala Food Tree Species listed in Appendix 2 of the NSW State Koala Recovery Plan (DECC 2008)	Possible
Grey-headed Flying Fox	V P	V	**Breeding**	n/a	-
			Foraging	forests, woodlands, heaths, urban gardens and cultivated fruit crops	Possible

Table 6. Likelihood of occurrence of EECs in study area

EEC	NSW Status	Comm. Status	Habitat	Likelihood of occurrence in study area
Carex Sedgeland	E3		drainage depressions in valley floors, frost hollows, and undulating terrain between 440 and 1360 m in altitude.	Unlikely. No drainage depressions evident.
Howell Shrublands	E3		confined to areas of extensive granite outcropping	Nil. Granite outcrops absent
McKies Stringybark/Blackbutt Open Forest	E3		found on reddish, weathered (laterite) soils in low-lying areas, hill slopes and open depressions	Unlikely.Landscape unsuitable, Black Cypress not present
Montane Peatlands and Swamps	E3	E	accumulated peaty sediments on poorly drained flats in the headwaters of streams	Unlikely. Landscape unsuitable, shrub layer absent
New England Peppermint Woodland on Basalts	E4B	CE	valley flats on basaltic soils, fine-grained sedimentary and acid volcanic substrates and subject to cold air drainage	Unlikely. Landscape and geology unsuitable.
Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland	E3		mainly confined to the high undulating basalt plateau with deep, chocolate or krasnozem loam soils	Unlikely. Geology unsuitable.
Upland Wetlands	E3	E	on watershed wetlands mostly above 900m, most commonly on landscapes associated with Tertiary basalt flows	Unlikely. Landscape and geology unsuitable.
White Box Yellow Box Blakely's Red Gum Woodland	E3	CE	found on relatively fertile soils on the tablelands and western slopes of NSW above approximately 170 m altitude	**Likely.** Box and Gum species recorded as present

Discussion

Type and degree of impacts of the proposal

The Proposal would not necessarily involve the removal of woodland vegetation cover within the subject site because the sparsity and location of existing trees is such that there is ample area free of tree cover within the subject site. There is however potential for impacts on ground layer grasses and herbs.

Direct impacts are expected to consist of loss or modification of ground layer vegetation over an area of up to 1 ha.

No indirect or off-site impacts are considered likely.

The receiving environment has been subjected to a long period of disturbance associated with grazing and there is no indication that the receiving environment might be unduly sensitive to the impacts of the Proposal.

TSC Act - Assessment of Significance

The TSC Act Assessment of Significance (i.e. the 7-part Test) outlines factors to be considered when determining whether an action, development or activity is likely to significantly affect threatened species, populations or ecological communities, or their habitats (known previously as the "8-part test").

The subject species for the 7-part test are:

- Spotted Harrier, Little Eagle, Black Falcon, Powerful Owl, Brown Treecreeper, Varied Sittella, Scarlet Robin, Grey-headed Flying Fox (grouped as highly mobile aerial species with large home ranges);
- Spotted-tail Quoll (a terrestrial species with large home range);
- Koala (an arboreal species), and
- White Box Yellow Box Blakely's Red Gum Woodland (an EEC/CEC)

Part (a) of the 7-part test considers whether the proposal is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction. Because of the small area and poor condition of habitat that would be modified by the proposal it would be unlikely to have a significant impact on species with large home ranges and impacts on breeding habitat could be minimised or avoided by retaining any trees with hollows.

Similarly, impacts on Koalas could be minimised or avoided, if required, by retention of preferred Koala species and control of domestic dogs.

Provided that appropriate actions are undertaken to avoid or minimise the potential impacts it is unlikely that a viable local population of the species is likely to be placed at risk of extinction.

Part (b) of the 7-part test does not apply as endangered populations as listed under the *TSC Act* do not occur in the study area or locality.

Part (c) of the 7-part test considers whether the proposal is likely to have an adverse effect on the extent of the ecological community or substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

Because of the small area and poor condition of the vegetation that would be impacted and the local and regional context of vegetation of similar type and condition, adverse impacts on the extent or composition of the ecological community are unlikely to be significant.

Impacts on White Box Yellow Box Blakely's Red Gum Woodland could be minimised by tree removal and siting the dwelling envelope to avoid any significant areas of native ground layer vegetation (should they occur). Residual impacts could be offset by rehabilitation of vegetation elsewhere on the property.

Part (d) of the 7-part test considers the extent of habitat removal or modification, the potential for isolation or fragmentation of habitat and the importance of that habitat to the long-term survival of the species or ecological community.

As the extent of habitat removal or modification is small (1-2ha), its location with respect to retained habitat is such that it would not contribute to fragmentation or isolation of habitat and its condition is poor, it is unlikely to be important to the long-term survival of any species or ecological community.

Part (e) examines whether the action proposed is likely to have an adverse effect on critical habitat. Critical habitat as listed in the Register of Critical Habitat kept by the Director General of Department of Environment and Conservation does not occur in the study area.

Part (f) examines whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan. A Recovery Plan has been prepared for the Koala. There are no other relevant recovery or threat abatement plans.

Objective 2 of the Koala Recovery Plan is: To rehabilitate and restore koala habitat and populations. To be consistent with the objectives and actions of that recovery plan a Koala SPOT Assessment should be undertaken to determine the extent of usage of the subject site by Koalas and if usage is detected, planting of Koala habitat trees may be required to offset any Koala feed trees lost to development.

Part (g) examines whether the proposal is part of a key threatening process. The proposal potentially includes native vegetation clearance, which is recognised as a key threatening process.

As no threat abatement plan has yet been prepared by the NSW National Parks and Wildlife Service, it is not possible to review the proposed activity in light of the plan. Notwithstanding this, clearing of native vegetation may be considered as a threatening process in a generic sense *ie:* is the proposal likely to have a significant effect on threatened species, populations or ecological communities, or their habitats, and in particular, would it:

- cause fragmentation of ecological communities;
- reduce the viability of ecological communities by disrupting ecological functions;
- result in the destruction of habitat and loss of biological diversity; and

- lead to soil and bank erosion, increased salinity and loss of productive land.

Based on this assessment it is considered that the Proposal would not be likely to further fragment ecological communities, disrupt ecological functions, result in the loss of biological diversity or lead to erosion, and therefore would not increase the impact of a key threatening process.

EPBC Act – Administrative Guidelines

The Significant Impact Guidelines to the EP&BC Act examine whether an action has, would have, or is likely to have a significant impact on a threatened species or community.

The following consideration of the Guidelines indicate that the Proposal would not be likely to have a significant impact on the Vulnerable species Koala and Grey-headed Flying Fox.

An action is only likely to have a significant impact on a Vulnerable species if there is a real chance or possibility that it would impact on an 'important population' of the species.

An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal;
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

As there are few indications that populations of Koala or Grey-headed Flying Fox are likely to occur within the subject site, important populations are considered unlikely to occur there and the Guidelines indicate that the Proposal would not be likely to have a significant impact.

For the Endangered species Spotted-tail Quoll assessed as possibly occurring in the study area, an action is only likely to have a significant impact on an Endangered species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of a population;
- reduce the area of occupancy of the species;
- fragment an existing population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of a population;
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat;
- introduce disease that may cause the species to decline, or
- interfere with the recovery of the species.

As there are few indications Spotted-tail Quoll individuals or populations are likely to occur in the study area, it is unlikely that the Proposal would decrease the size, reduce the area of occupancy, fragment or disrupt the breeding cycle of a population. Similarly, it is unlikely that the Proposal would reduce the area of occupancy, adversely affect habitat critical for survival, affect the

availability or quality of habitat, establish invasive species, introduce disease or interfere with the recovery of those species.

Conclusions

It is concluded from the preliminary application of the TSC 7-part Test and the EPBC Significant Impact Guidelines that, provided appropriate actions are undertaken to avoid or minimise any impacts on remnant trees, especially those with hollows or that are preferred Koala habitat trees, and on any remnant vegetation that is part of an EEC, then the proposal would be unlikely to have a significant impact on threatened species, populations or ecological communities, or their habitats, or critical habitat.

Where impacts cannot be avoided, there are likely to be opportunities to offset residual impacts by rehabilitation of vegetation elsewhere in the study area.

It is therefore unlikely that a Species Impact Statement or referral to the Federal Environment Minister would be required.

Photographs

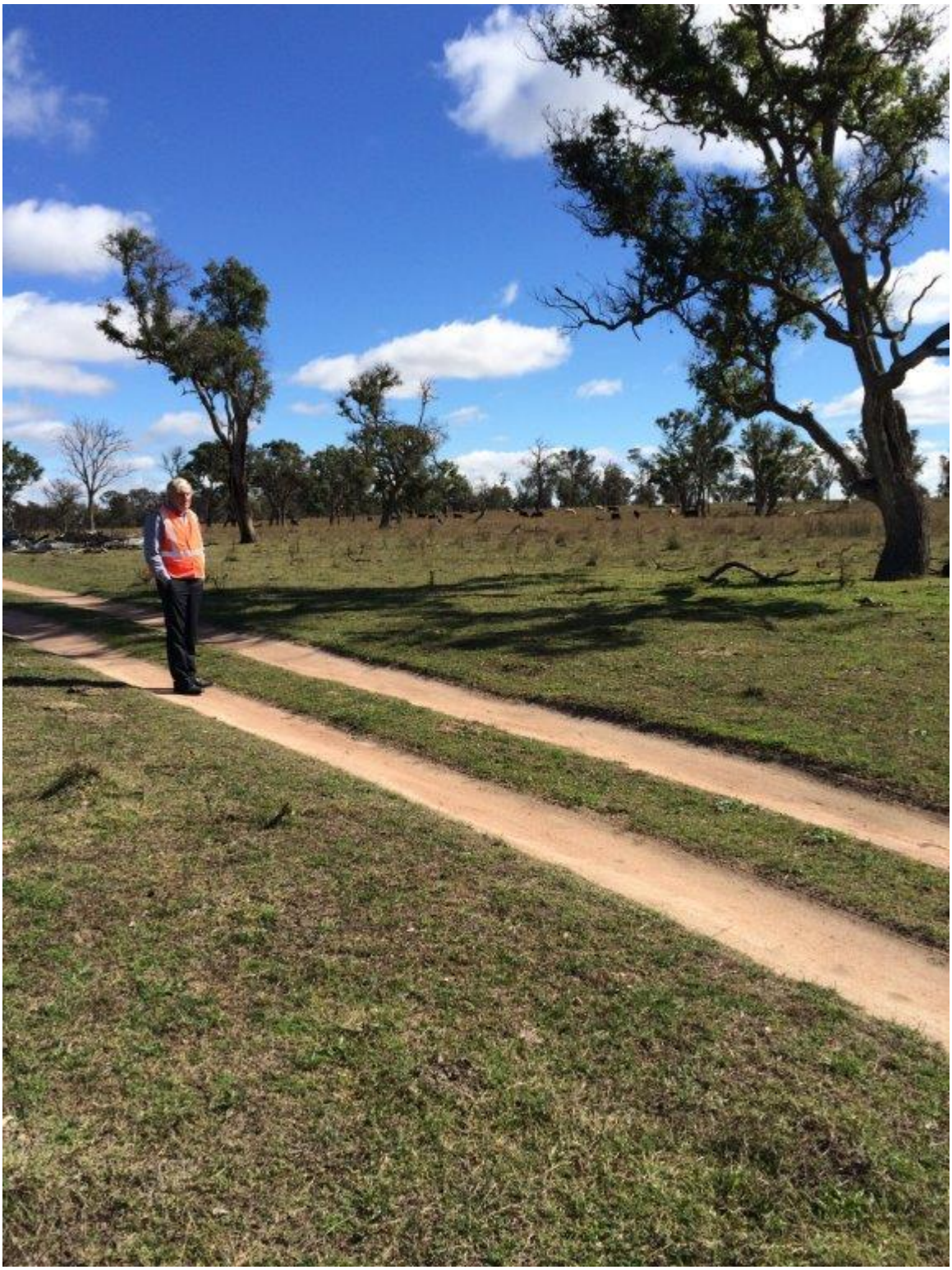

Photo 1. View north-west from the proposed building envelope.

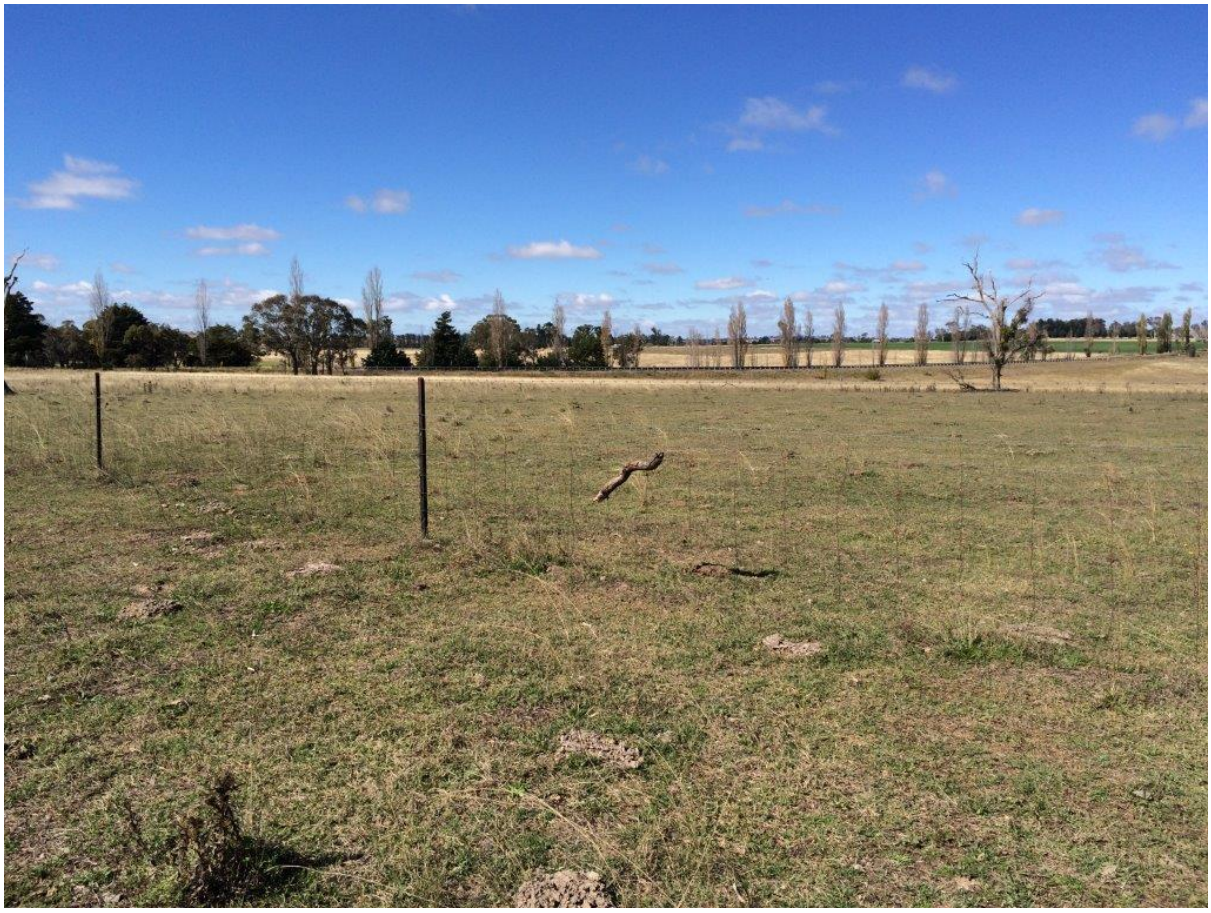

Photo 2. View south-east from the proposed building envelope.